What is claimed is:

1.   A processing apparatus, comprising:

a diamond tool having a cutting edge made of a diamond
and a rake face including a first edge portion shaped in a
straight line, a second edge portion shaped in an arbitrary
shape and a third edge portion formed between an end portion
of the first edge portion and an end portion of the second
edge portion and having a first end portion and a second end
portion, wherein a tip end peak point of the rake face is
located on the third edge portion;

a holding member to hold the diamond tool;

a shifting device to shift relatively at least one of
the rake face of the diamond tool and a portion of an article
to be processed in a direction in which the rake face and a
portion of the article cross with each other;

wherein the first end portion of the third edge portion
continues to the end portion of the second edge portion, and

wherein when the first edge portion is made as X axis,
the tip end peak point of the rake face is made as an
intercept (0, y) on Y axis, and the rake face is projected in
the first quadrant on an X − Y plane, the shape between the
end portion of the first edge portion and the end portion of

the second edge portion is asymmetric around a straight line

which passes at the intercept and is parallel to X axis and

the shape is shaped to be not a straight line such that Y

value of a point on the shape increases as X value of the

point increases.

2.   The processing apparatus of claim 1, wherein a shape of

the third edge portion from the tip end peak point of the

rake face to the end portion of the second edge portion is a

quadratic curve on which Y increases when X increases.

3.   The processing apparatus of claim 2, wherein the shape

of the third edge portion from the tip end peak point of the

rake face to the end portion of the second edge portion is a

circular arc on which Y increases when X increases.

4.   The processing apparatus of claim 1, wherein when the

first edge portion is made as X axis, the tip end peak point

of the rake face is made as an intercept (0, y) on Y axis,

and the rake face is projected in the first quadrant on an X

- Y plane, the following formula is satisfied when the

coordinate of the end portion of the second edge portion is

(X_2, Y_2):

$$2y < y_2$$

5.   The processing apparatus of claim 1, wherein y of the intercept (0, y) is 0 to 0.4 μm in length.

6.   The processing apparatus of claim 1, wherein the rake face further includes a fourth edge portion shaped in an arbitrary form and connecting the end portion of the first edge portion and the second end portion of the third edge portion.

7.   The processing apparatus of claim 6, wherein the second end portion of the third edge portion is the tip end peak point of the rake face.

8.   The processing apparatus of claim 1, wherein the second end portion of the third edge portion continues to the end portion of the first edge portion.

9.   The processing apparatus of claim 8, wherein the tip end peak point coincides with the end portion of the first edge portion.

10.   The processing apparatus of claim 1, wherein the third
edge portion is shaped in a convex.

11.   The processing apparatus of claim 10, wherein the third
edge portion is shaped in a convex circular arc.

12.   The processing apparatus of claim 6, wherein the third
edge portion and the fourth edge portion are shaped in a
convex.

13.   The processing apparatus of claim 6, wherein the third
edge portion and the fourth edge portion are shaped in a
convex circular arc.

14.   A processing apparatus, comprising:
        a diamond tool having a cutting edge made of a diamond
and a rake face including a first edge portion shaped in a
straight line, a second edge portion located to extend in a
direction crossing the first edge portion and a third edge
portion formed between an end portion of the first edge
portion and an end portion of the second edge portion and
shaped in a circular arc;
        a holding member to hold the diamond tool;

a shifting device to shift relatively at least one of the rake face of the diamond tool and a portion of an article to be processed in a direction in which the rake face and a portion of the article cross with each other;

wherein the third edge portion is asymmetric for a bisector of an angle formed between a first tangential line at a third edge portion-side end portion of the first edge portion and a second tangential line at a third edge portion-side end portion of the second edge portion.

15.   The processing apparatus of claim 14, wherein when a perpendicular line to the bisector is drawn from a first edge portion-side end portion of the third edge portion, the cross point between the perpendicular line and the bisector is located at an outside of the rake face.

16.   A processing apparatus, comprising:

a diamond tool having a cutting edge made of a diamond and a rake face including a first edge portion shaped in a straight line, a second edge portion located to extend in a direction crossing the first edge portion;   a holding member to hold the diamond tool and a third edge portion formed between an end portion of the first edge portion and

an end portion of the second edge portion and shaped in a
circular arc;

a shifting device to shift relatively at least one of
the rake face of the diamond tool and a portion of an article
to be processed in a direction in which the rake face and a
portion of the article cross with each other; wherein an
angle formed between a first tangential line at a third edge
portion-side end portion of the first edge portion and a
third tangential line at a first edge portion-side end
portion of the third edge portion is less than 90 degrees.

17. The processing apparatus of claim 16, wherein the third
edge portion is asymmetric for a bisector of an angle formed
between a first tangential line at a third edge portion-side
end portion of the first edge portion and a second tangential
line at a third edge portion-side end portion of the second
edge portion and wherein when a perpendicular line to the
bisector is drawn from a first edge portion-side end portion
of the third edge portion, the cross point between the
perpendicular line and the bisector is located at an outside
of the rake face.

18.   The processing apparatus of claim 1, wherein the
diamond tool creates a curved shape on the processed article
with the third edge portion and transfers the shape of the
first edge portion onto the processed articles as a straight
line shape continued to the curved shape.

19.   The processing apparatus of claim 8, wherein the
diamond tool creates a curved shape on the processed article
with the third edge portion and creates a straight line shape
continued to the curved shape on the processed article with
the third edge portion-side end portion of the first edge
portion.

20.   The processing apparatus of claim 1, wherein the
diamond tool is used for producing a die to form an optical
element in such a way that the holding member holds the first
edge portion of the diamond tool with an angle parallel to or
within a range of ± 10° for the optical axis of the optical
element to be produced.

21.   The processing apparatus of claim 1, wherein the second
edge portion is shaped in a straight line.

22.   A processing method, comprising steps of:

using a diamond tool having a cutting edge made of a
diamond and a rake face including a first edge portion shaped
in a straight line, a second edge portion shaped in an
arbitrary shape and a third edge portion formed between an
end portion of the first edge portion and an end portion of
the second edge portion and having a first end portion and a
second end portion, wherein the first end portion of the
third edge portion continues to the end portion of the second
edge portion, wherein when the first edge portion is made as
X axis, the tip end peak point of the rake face is made as an
intercept (0, y) on Y axis, and the rake face is projected in
the first quadrant on an X - Y plane, the shape between the
end portion of the first edge portion and the end portion of
the second edge portion is asymmetric around a straight line
which passes at the intercept and is parallel to X axis and
the shape is shaped to be not a straight line such that Y
value of a point on the shape increases as X value of the
point increases, and wherein a tip end peak point of the rake
face is located on the third edge portion; and

shifting relatively at least one of the rake face of
the diamond tool and a portion of an article to be processed

in a direction in which the rake face and a portion of the
article cross with each other.

23.   The processing method of claim 22, wherein a shape of
the third edge portion from the tip end peak point of the
rake face to the end portion of the second edge portion is a
quadratic curve on which Y increases when X increases.

24.   The processing method of claim 23, wherein the shape of
the third edge portion from the tip end peak point of the
rake face to the end portion of the second edge portion is a
circular arc on which Y increases when X increases.

25.   The processing method of claim 22, wherein when the
first edge portion is made as X axis, the tip end peak point
of the rake face is made as an intercept (0, y) on Y axis,
and the rake face is projected in the first quadrant on an X
- Y plane, the following formula is satisfied when the
coordinate of the end portion of the second edge portion is
(X_2, Y_2):

    $2y < y_2$

26.   The processing method of claim 22, wherein y of the
intercept (0, y) is 0 to 0.4 µm in length.

27.   The processing method of claim 22, wherein the rake
face further includes a fourth edge portion shaped in an
arbitrary form and connecting the end portion of the first
edge portion and the second end portion of the third edge
portion.

28.   The processing method of claim 27, wherein the second
end portion of the third edge portion is the tip end peak
point of the rake face.

29.   The processing method of claim 22, wherein the second
end portion of the third edge portion continues to the end
portion of the first edge portion.

30.   The processing method of claim 29, wherein the tip end
peak point coincides with the end portion of the first edge
portion.

31.   The processing method of claim 22, wherein the third
edge portion is shaped in a convex.

32.   The processing method of claim 31, wherein the third
edge portion is shaped in a convex circular arc.

33.   The processing method of claim 27, wherein the third
edge portion and the fourth edge portion are shaped in a
convex.

34.   The processing method of claim 33, wherein the third
edge portion and the fourth edge portion are shaped in a
convex circular arc.

35.   A processing method, comprising steps of:
       using a diamond tool having a cutting edge made of a
diamond and a rake face including a first edge portion shaped
in a straight line, a second edge portion located to extend
in a direction crossing the first edge portion, wherein the
third edge portion is asymmetric for a bisector of an angle
formed between a first tangential line at a third edge
portion-side end portion of the first edge portion and a
second tangential line at a third edge portion-side end
portion of the second edge portion; and

shifting relatively at least one of the rake face of

the diamond tool and a portion of an article to be processed

in a direction in which the rake face and a portion of the

article cross with each other.

36.   The processing method of claim 35, wherein when a

perpendicular line to the bisector is drawn from a first edge

portion-side end portion of the third edge portion, the cross

point between the perpendicular line and the bisector is

located at an outside of the rake face.

37.   A processing method, comprising steps of:

using a diamond tool having a cutting edge made of a

diamond and a rake face including a first edge portion shaped

in a straight line, a second edge portion located to extend

in a direction crossing the first edge portion, wherein an

angle formed between a first tangential line at a third edge

portion-side end portion of the first edge portion and a

third tangential line at a first edge portion-side end

portion of the third edge portion is less than 90 degrees;

and

shifting relatively at least one of the rake face of

the diamond tool and a portion of an article to be processed

in a direction in which the rake face and a portion of the
article cross with each other.

38.   The processing method of claim 37, wherein the third
edge portion is asymmetric for a bisector of an angle formed
between a first tangential line at a third edge portion-side
end portion of the first edge portion and a second tangential
line at a third edge portion-side end portion of the second
edge portion and wherein when a perpendicular line to the
bisector is drawn from a first edge portion-side end portion
of the third edge portion, the cross point between the
perpendicular line and the bisector is located at an outside
of the rake face.

39.   The processing method of claim 22, wherein the diamond
tool creates a curved shape on the processed article with the
third edge portion and transfers the shape of the first edge
portion onto the processed articles as a straight line shape
continued to the curved shape.

40.   The processing method of claim 30, wherein the diamond
tool creates a curved shape on the processed article with the
third edge portion and creates a straight line shape

continued to the curved shape on the processed article with the third edge portion-side end portion of the first edge portion.

41.   The processing method of claim 22, wherein the diamond tool is used for producing a die to form an optical element in such a way that the holding member holds the first edge portion of the diamond tool with an angle parallel to or within a range of ± 10° for the optical axis of the optical element to be produced.

42.   The processing method of claim 22, wherein the second edge portion is shaped in a straight line.

43.   A diamond tool, comprising
        a cutting edge made of a diamond, and
        a rake face including a first edge portion shaped in a straight line, a second edge portion shaped in an arbitrary shape and a third edge portion formed between an end portion of the first edge portion and an end portion of the second edge portion and having a first end portion and a second end portion,

wherein a tip end peak point of the rake face is located on the third edge portion;

wherein the first end portion of the third edge portion continues to the end portion of the second edge portion, and

wherein when the first edge portion is made as X axis, the tip end peak point of the rake face is made as an intercept $(0, y)$ on Y axis, and the rake face is projected in the first quadrant on an X – Y plane, the shape between the end portion of the first edge portion and the end portion of the second edge portion is asymmetric around a straight line which passes at the intercept and is parallel to X axis and the shape is shaped to be not a straight line such that Y value of a point on the shape increases as X value of the point increases.

44.   A diamond tool, comprising:

a cutting edge made of a diamond; and

a rake face including a first edge portion shaped in a straight line, a second edge portion located to extend in a direction crossing the first edge portion and a third edge portion formed between an end portion of the first edge portion and an end portion of the second edge portion and shaped in a circular arc;

wherein the third edge portion is asymmetric for a bisector of an angle formed between a first tangential line at a third edge portion-side end portion of the first edge portion and a second tangential line at a third edge portion-side end portion of the second edge portion.

45.   A diamond tool, comprising:

a cutting edge made of a diamond; and

a rake face including a first edge portion shaped in a straight line, a second edge portion located to extend in a direction crossing the first edge portion and a third edge portion formed between an end portion of the first edge portion and an end portion of the second edge portion and shaped in a circular arc;

wherein an angle formed between a first tangential line at a third edge portion-side end portion of the first edge portion and a third tangential line at a first edge portion-side end portion of the third edge portion is less than 90 degrees.